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NPIC/TSSG/EP/820-68
4 March 1968

MEMORANDUM FOR THE RECORD

25X1 SUBJECT: [redacted] Split Format Light Table, Preliminary Tests

25X1 1. The [redacted] Split Format Light Table is a prototype unit purchased as an off-the-shelf item. The purpose of this unit was to incorporate two new features into the standard light tables - a light source up to 3000 foot lamberts (Ft.L.) and a film loop takeup capability from zero to 72 inches. In the course of building this table, other changes were incorporated. A new optics carriage was designed and installed and an electric clutch mechanism was designed for the carriage. The masks for the light surfaces were placed under the glass and remotely operated.

25X1 2. The increased illumination is attained by using two grids, similar to [redacted] 918 light grids, and a redesigned power supply. The heat generated by this is dissipated by a liquid cooling system. The two light sources are controlled by a single on-off switch, and separate brightness controls for each grid. The on-off switch actually controls the cooling liquid pump. When the flow rate of the liquid reaches a certain value, a flow switch closes a relay for the grid power. At initial turn on, it takes up to 8 minutes for the grid relay to close. On occasion, an unstable condition of the flow switch opening and closing at low frequency has been noted.

3. The light source does not produce 3000 Ft.L. Although the illumination is above 3000 Ft.L. when the machine is turned on, it drops off rapidly. After 30 minutes, the values are 2455 Ft.L. for the left side and 2835 Ft.L. for the right. The maximum values after 2 hours are 2220 Ft.L. on the left side and 2565 on the right (see Attachment 1). At the minimum setting of the brightness controls the maximum values on the surface are 115 Ft.L. on the left and 130 Ft.L. on the right. After 2 hours of operation at maximum brightness with 2.0 density film on the lighted surfaces, the temperature on the surfaces was measured at 135°F.

4. The takeup mechanism can handle a loop of film up to 79 inches long. The levers which open and close the center of the table are hard to operate. The rollers in the center of the table are too close together and cause binding of the film when a loop is taken up and the table is fully closed. These are minor problems. The takeup feature itself is well designed and easily operated.

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5. The optics carriage is designed to take all viewing devices currently in use. It can be locked in the X and Y directions by the use of an electric clutch. In these two directions, fine feed mechanisms are used when the locking mechanism is actuated. The carriage can be freed by a push-button switch on the optics mount. The Z movement of the carriage is done by a coarse or fine manual drive on the optics mount. There is no locking feature in this direction.

6. In the X and Y directions, it takes a force of more than 10 pounds to move the carriage with the clutch turned on. With the clutch off, the break away force is 4 to 5 pounds in both directions. It takes a force of 2 to 5 pounds to sustain movement in the X direction, and less than 2 pounds in the Y direction. The X motion is therefore very rough.

7. The masking devices are located below the glass. They are manually operated by controls to the left and right of the table. The film rollers at either end of the table interfere with easy, rapid operation of the shade controls. These should be moved to a more accessible location.

8. An attempt was made to measure the parallelism of the carriage travel and the lighted surface. It was found that the distance from the carriage to the table varies up to .027 inches (see Attachment 2). This is caused by a combination of uneven glass on the lighted surfaces and skew tendencies of the carriage. As matters stand, the optics currently in use will not stay in focus from one end of the table to the other.

9. This memorandum has listed items which should be corrected by the manufacturer prior to final evaluation, and is not intended to be a final report.

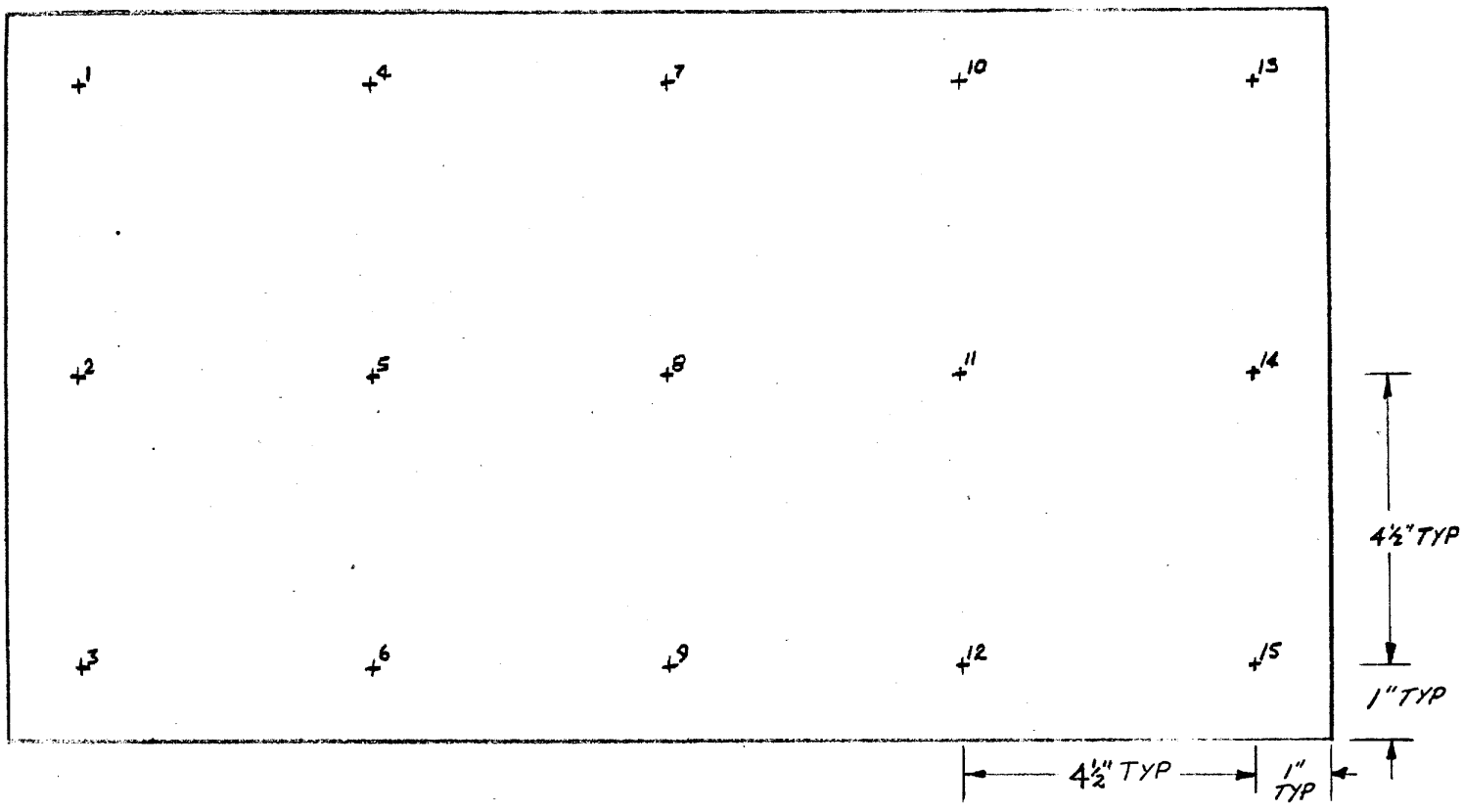
25X1

Equipment Performance Branch, DED

ATTACHMENT: 1 Grid for Illumination Measurements
2 Variations in Distance from Carriage to Table

ATTACHMENT 1

SHEET 1



MAXIMUM BRIGHTNESS

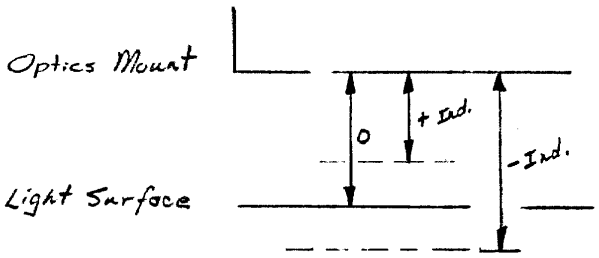
GRID POSITION	LEFT	RIGHT
1	1500	1455
2	1625	1515
3	1280	1550
4	1956	2125
5	2170	2510
6	1870	2355
7	2080	2565
8	2265	2620
9	1990	2477
10	2125	2125
11	2170	2532
12	1917	2265
13	1550	1500
14	1650	1722
15	1455	1500

MINIMUM BRIGHTNESS

1		62
3	53	
8	115	130

ATTACHMENT 2

VARIATIONS IN DISTANCE FROM CARRIAGE TO TABLE



-.013	-.014	-.010
-.011	-.014	-.007
-.014	-.012	-.004

LEFT

-.008	-.020	-.002
-.006	-.015	+.005
.000	-.015	+.007

RIGHT